

Unit 3... Graphing Linear Equations & Inequalities in Two Variables (Keystone Review)**Part 3.1 – Introduction to Functions**_____ 1) Evaluate the function $f(x) = 7x$ for $x = 0.75$.

- A)
- -5.25
- B)
- 0.75
- C)
- 5.25
- D)
- 7.75

_____ 2) Evaluate the function $g(x) = 15 - x$ for $x = 3$.

- A)
- 18
- B)
- 12
- C)
- -12
- D)
- -18

_____ 3) What is the greatest value in the range of $y = x^2 - 7$ for the domain $\{-2, 0, 1\}$?

- A)
- -3
- B)
- -7
- C)
- -8
- D)
- -6

_____ 4) Which statement is true about the data below?

- A) Function
-
- B) Relation
-
- C) Vertical Line Test
-
- D) None of them

x	y
-4	-2
-1	-2
0	-2
3	-2

_____ 5) What is the greatest value in the domain of the function $h(x) = 3x - 5$ for the range $\{-2, 0, 4\}$?

- A)
- -1
- B)
- $\frac{5}{3}$
- C)
- 3
- D)
- -3

_____ 6) Which statement is true about the data below?

- A) Function
-
- B) Relation
-
- C) Vertical Line Test
-
- D) None of them

Mount Rushmore Temperatures (°F)	
Age of Mountain	At Top of Mountain
80	72
65	58
93	84
98	91
74	69

Part 3.2 – Formulas and Functions

_____ 7) The formula $C = \frac{5}{9}(F - 32)$ is used to convert temperatures from Fahrenheit to Celsius. What is 55°C in degrees F ?

- A) 131°F B) 12.8°F C) 156.6°F D) 62.6°F

_____ 8) You can find the cost of renting a hot-air balloon at Tavares Balloon Rental using the formula $C = 85 + 36h$, where C is the total cost and h is the number of hours rented. Solve this equation for h .

- A) $h = C - 121$ B) $h = \frac{C - 85}{36}$ C) $h = C - 85$ D) $h = \frac{C - 36}{85}$

_____ 9) Kelly, Ted, and Lauren opened savings accounts. Kelly started with \$80 and saves \$30 per month. Ted started with \$50 and saves twice as much as Kelly each month. Lauren started with twice as much as Kelly and saves a third as much as Ted each month. Let m represent the number of months each has been saving. Which expression represents the total amount of money saved by Kelly, Ted, and Lauren in m months.

- A) $290 + 270m$ B) $110 + 290m$ C) $270 + 290m$ D) $290 + 110m$

_____ 10) A rectangular table measures 36 inches by 48 inches. A square game board that is 24 inches on each side is on the table. Which amount of the table's area is NOT covered by the game board?

- A) 264 in^2 B) 1152 in^2 C) 1704 in^2 D) 1728 in^2

_____ 11) The formula for the time that a traffic light remains yellow is $t = \frac{1}{8}s + 1$, where t is the time in seconds s is the speed limit. If the light is yellow for 6 seconds, what is the speed limit in miles per hour?

- A) 56 B) 40 C) 10 D) 1.75

_____ 12) Solve the literal equation $\frac{2s - t}{3z} = 1$ for s .

- A) $s = \frac{2 - 2t}{3z}$ B) $s = \frac{3z + t}{-2}$ C) $s = \frac{3z}{2 - 2t}$ D) $s = \frac{3z + t}{2}$

Part 3.3 – Coordinates and Scatter Plots

_____ 13) In which quadrant on the coordinate plane is $(-3, -1)$?

- A) I B) II C) III D) IV

- _____ 14) What are the coordinates of the point that is on the y -axis 6 units above the x -axis?
- A) $(0, -6)$ B) $(0, 6)$ C) $(6, 0)$ D) $(-6, 0)$
- _____ 15) The point (q, r) is in Quadrant II. The value of q must be _____. The value of r must be _____.
- A) positive, negative B) negative, negative
- C) positive, positive D) negative, positive
- _____ 16) The coordinates of three vertices of a rectangle are $(-2, -1)$, $(2, -5)$, and $(9, 2)$. What are the coordinates of the fourth vertex?
- A) $(4, 3)$ B) $(5, 6)$ C) $(5, 5)$ D) $(6, 6)$
- _____ 17) Suppose you take a survey of all the schools in your state. What would you expect the relationship between the number of students and the number of teachers in each school to be?
- A) positive correlation B) negative correlation
- C) no correlation D) none of the above
- _____ 18) Which sets of data would most likely have a negative correlation?
- A) the population of Detroit over a 10-year period and the population of Kansas over the same 10-year period
- B) the height of a person and that person's shoe size
- C) the number of car stops to fill its gas tank and the amount of gas the tank can hold
- D) the size of an animal and the amount of food it eats each day

Part 3.4 – Graphing Linear Equations

- _____ 19) Suppose you hire an electrician to install several electrical outlets in your home. The electrician charges \$68 for materials plus \$40 per hour (or fraction of an hour). How much will the electrician charge you if the job takes $2\frac{1}{4}$ hours?

A) \$148 B) \$158 C) \$188 D) \$208

- _____ 20) Which function is modeled by the table at the right?

A) $f(x) = x - 2$ B) $f(x) = 2x + 1$

C) $f(x) = -x + 1$ D) $f(x) = \frac{1}{2}x - 1$

x	$f(x)$
-3	-5
0	1
2	5
3	7

_____ 21) Which points are on the graph of the function $g(x) = 10 - 4x$?

A) $(18, -2), (10, 0), (2, 2)$

B) $(-18, 2), (-10, 0), (-2, 2)$

C) $(2, -18), (0, -10), (-2, -2)$

D) $(-2, 18), (0, 10), (2, 2)$

_____ 22) What is the function rule for the total cost $T(b)$ of b books, if each book costs \$11.95?

A) $T(b) = 11.95b$

B) $T(b) = b + 11.95$

C) $T(b) = 11.95 - b$

D) $T(b) = b - 11.95$

_____ 23) What is the function rule for the amount of change $C(x)$ you receive from a \$50 bill if you buy x pounds of dog food at \$1.60 a pound?

A) $C(x) = 1.6x - 50$

B) $C(x) = 50x - 1.6$

C) $C(x) = 50 - 1.6x$

D) $C(x) = 160 - 50x$

_____ 24) What is the rule for the function to the right?

A) $f(x) = x - 5$

B) $f(x) = -5x - 4$

C) $f(x) = 5x - 1$

D) $f(x) = -5x + 1$

x	$f(x)$
0	1
1	-4
2	-9
3	-14
4	-19

Part 3.5 – Quick Graphs Using Intercepts

_____ 25) Find the y -intercept of the line whose equation is $5x - 2y = -10$.

A) $(0, 2)$

B) $(0, 5)$

C) $(0, -5)$

D) $(0, -10)$

_____ 26) What is the x -intercept of $17x + y = 51$?

A) -3

B) 51

C) 3

D) 0

Part 3.6 – Slope of a Line

_____ 27) A line has slope $\frac{4}{3}$. Through which two points could this line pass?

A) $(24, 19), (8, 10)$

B) $(10, 8), (16, 0)$

C) $(28, 10), (22, 2)$

D) $(4, 20), (0, 17)$

_____ 28) A horizontal line passes through $(5, 22)$. Which other point does the line contain?

A) $(5, 2)$

B) $(0, 22)$

C) $(22, 5)$

D) $(0, 5)$

_____ 29) The steepness, or grade, of a road is expressed as a percent. If a road rises 3 feet for every 24 horizontal feet, what percent grade is this?

- A) $\frac{3}{24}$ B) 8% C) $\frac{1}{8}$ D) 12.5%

_____ 30) Find the slope of the line through the given points: (3 , 0) and (7 , 16).

- A) 4 B) $\frac{1}{4}$ C) -4 D) $-\frac{1}{4}$

_____ 31) Find the value of y so that the line passing through (-3 , y) and (4 , 4) has a slope of -2.

- A) 18 B) 10 C) 2 D) -6

_____ 32) Classify the type of slope that passes through the given points: (-2 , -2) and (3 , -2)

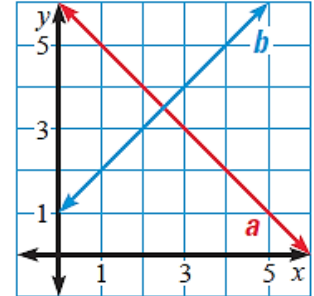
- A) positive B) negative C) undefined D) zero

_____ 33) Which two points would illustrate an undefined slope?

- A) (1 , 3) and (3 , 1) B) (-1 , 3) and (1 , 3)
C) (1 , 3) and (3 , -1) D) (1 , -3) and (1 , 3)

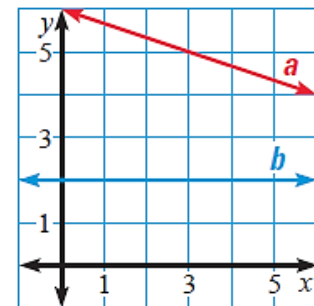
_____ 34) Using the graph to the right, determine the slope of both lines.

- A) {1,6}
B) {-2, 2}
C) {-1,1}
D) {2.5,3.5}



_____ 35) Using the graph to the right, determine the slope of both lines.

- A) {undefined , -3}
B) {undefined , $-\frac{1}{3}$ }
C) { $-\frac{1}{3}$, 0}
D) {-3,0}



_____ 36) If the pair of points $(x, 3)$ and $(2, 8)$ has a slope of $-\frac{5}{2}$, find x .

- A) -4 B) 4 C) $-\frac{1}{4}$ D) $\frac{1}{4}$

_____ 37) Find the rate of change given the following table.

- A) -3
B) 9
C) 3
D) $\frac{1}{9}$

Time (hours)	Temperature (°F)
1	-2
4	7
7	16
10	25
13	54

_____ 38) If the rate of change for the following table is 3.95, identify what the rate of change means.

- A) each person pays 3.95 less than the cost
B) cost per person is \$3.95
C) each person pays half the cost
D) cost per person increases by \$1

People	Cost (dollars)
2	7.90
3	11.85
4	15.80
5	19.75
6	23.70

Part 3.7 – Graphing using Slope-Intercept Form (SIF)

_____ 39) If $y + 8 = 0$, what is the slope of the graph?

- A) undefined B) 8 C) -8 D) 0

_____ 40) Solve for y : $-8x + 4y = 32$

- A) $y = -2x + 8$ B) $y = 2x - 8$ C) $y = 2x + 8$ D) $y = -2x - 8$

_____ 41) Which equation has the same y -intercept as $y = 4x - 3$?

- A) $y - 3 = x$ B) $y = 8x + 3$ C) $3 - y = 4x$ D) $y = -3 + 8x$

_____ 42) Find the slope of the line whose equation is $3y = 5x + 21$.

- A) 5 B) $\frac{5}{3}$ C) 7 D) -7

_____ 43) Which points does NOT lie on the graph of $y = 2x - 3$?

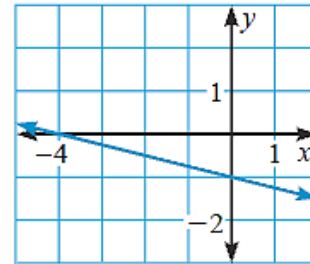
- A) $(2, -1)$ B) $(-1, -5)$ C) $(1, -1)$ D) $(0, -3)$

_____ 44) Which of the following is the equation of the line that has the same slope as $y = -\frac{3}{2}x + 2$ and the same y-intercept as $y = 3x - 2$?

- A) $y - 2 = -\frac{3}{2}x$ B) $-\frac{3}{2}x = y + 2$ C) $y + 2 = -\frac{3}{2}$ D) $-\frac{3}{2}x = y + 3$

_____ 45) Choose the equation of the graph shown to the right.

- A) $y = 4x - 1$ B) $y = -4x - 1$
C) $y = \frac{1}{4}x - 1$ D) $y = -\frac{1}{4}x - 1$



_____ 46) The base pay of a water-delivery person is \$210 per week. He also earns 20% commission on any sale he makes. If t represents total earnings and s represents sales, which equation relates total earnings t to sales s ?

- A) $s = 0.20t + 210$ B) $t = 0.2s + 210$ C) $t = 20s + 210$ D) $s = 20t + 210$

_____ 47) A music store is offering a coupon promotion on its CDs. The regular price for a CD is \$14. With the coupon, customers are given \$4 off the total purchase. Which equation models this situation where c is the number of CDs and t is the total cost of the purchase?

- A) $c = 14t - 4$ B) $c = 4t - 14$ C) $t = 4c - 14$ D) $t = 14c - 4$

Part 3.8 – Graphing Linear Inequalities in Two Variables

_____ 48) Which of the following is true of the graph of $y \geq -x + 1$?

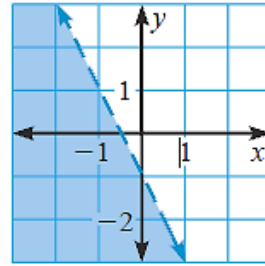
- A) the line is solid and the shading is above the line
B) the line is dashed and the shading is above the line
C) the line is solid and the shading is below the line
D) the line is dashed and the shading is below the line

_____ 49) The graph of which of the following is shaded above the line?

- A) $x + y < 9$ B) $x + y < -9$ C) $y - x < 9$ D) $x - y < 9$

_____ 50) Which linear inequality describes the graph at the right?

- A) $y < -2x - 1$ B) $y \leq -2x - 1$
C) $y \leq -\frac{1}{2}x - 1$ D) $y < -\frac{1}{2}x - 1$

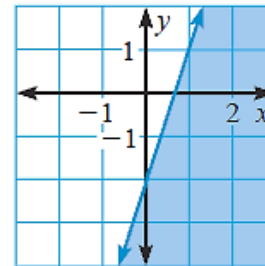


_____ 51) You want to spend less than \$20 on asparagus and bananas. Asparagus is \$3.00 per pound and bananas are \$0.50 per pound. Let a represent the weight of the asparagus and b represent the weight of the bananas. Which inequality below models this situation?

- A) $3a + 0.5b < 20$ B) $3a + 0.5b > 20$ C) $3a + 0.5b \leq 20$ D) $3a + 0.5b \geq 20$

_____ 52) Choose the inequality whose graph is shown to the right.

- A) $2y - 6x < -4$ B) $2y - 6x \leq -4$
C) $2y - 6x \geq -4$ D) $6x + 2y > 4$



Part 3.9 – Cumulative Review

_____ 53) Choose the coordinates of the point that lies in the fourth quadrant.

- A) $(7, 2)$ B) $(-7, -2)$ C) $(-7, 2)$ D) $(7, -2)$

_____ 54) Which equation is equivalent to $5p - 4 = 3p + 6$?

- A) $8p = 10$ B) $5p - 3p = 4 + 6$ C) $6 - 4 = 3p + 5p$ D) $5p - 4 = \frac{3p + 6}{3}$

_____ 55) Name the property demonstrated by $(j + a) + k = j + (a + k)$.

- A) associative property B) commutative property
C) distributive property D) addition property of equality

_____ 56) Which inequality represents the statement “one more than 2 times n is greater than 21”?

- A) $2n > 21$ B) $n + 3 > 21$ C) $2n + 21 > 1$ D) $2n + 1 > 21$

_____ 57) The sum of three consecutive integers is 102. What is the largest integer?

- A) 33 B) 35 C) 37 D) 40

_____ 58) Which are solutions of $3(x-4) \leq 18$ and $2(x-1) \geq 6$?

I. 9 II. 12 III. 15

- A) I only B) II only C) I and III D) II and III

_____ 59) Solve: $-4x + 7 = -13$

- A) -5 B) $-\frac{3}{2}$ C) $\frac{3}{2}$ D) 5

_____ 60) Which of the following is the correct simplification of the expression $6 + 10 \div 2 + 6 \times 3$?

- A) 26 B) 29 C) 42 D) 51

_____ 61) Solve: $\frac{4}{7} = \frac{d}{2}$

- A) 1 B) $\frac{8}{7}$ C) $\frac{7}{2}$ D) 14

_____ 62) Evaluate $\frac{5x^2}{3y-4}$ for $x = 2$ and $y = 3$.

- A) $\frac{20}{13}$ B) 2 C) 4 D) 5

_____ 63) What is the range of the function $f(x) = 2x^2 - 5$ when the domain is $\{-3, 0, 2, 4\}$?

- A) $\{-13, -3, 3, 28\}$ B) $\{-3, 0, 2, 4\}$
C) $\{13, -5, 3, 27\}$ D) $\{31, -5, 11, 59\}$

_____ 64) Which point lies on the graph of $2x + 5y = 6$?

- A) $(-2, 2)$ B) $(3, 0)$ C) $(0, 3)$ D) both A and B

_____ 65) Which point lies on the graph of $x = 3$?

- A) $(0, 3)$ B) $(-3, 3)$ C) $(3, -3)$ D) $\left(\frac{1}{3}, 3\right)$

_____ 66) The slope of the line passing through the points $(8, 0)$ and $(0, 8)$ is _____?

- A) positive B) negative C) zero D) undefined

_____ 67) Jimmy has a small hat business making decorated hats. He calculates his monthly cost y of producing x hats using the function $y = 1.9x + 350$. In January, his cost was \$458.30. How many hats did he make that month?

A) 1220

B) 1221

C) 57

D) 205

_____ 68) Write the equation $6x - 8y = 40$ in slope-intercept form.

A) $y = -\frac{3}{4}x - 5$

B) $y = -\frac{3}{4}x + 5$

C) $y = \frac{3}{4}x + 5$

D) $y = \frac{3}{4}x - 5$